



## PATENT ABSTRACTS OF JAPAN

(11) Publication number: **02113562 A**(43) Date of publication of application: **25.04.90**

(51) Int. Cl.

**H01L 23/473**(21) Application number: **63266047**(22) Date of filing: **24.10.88**(71) Applicant: **HITACHI LTD HITACHI VLSI ENG CORP**(72) Inventor: **NISHIUMA MASAHIKO  
TSUBOI TOSHIHIRO  
HONDA ATSUSHI****(54) SEMICONDUCTOR DEVICE****(57) Abstract:**

**PURPOSE:** To enable direct cooling via a base, and improve heat dissipating efficiency by forming a cavity part on the rear of a semiconductor pellet in a package, and forming a refrigerant-input-output hole linking with the cavity part.

**CONSTITUTION:** A cavity part 13 is formed on the rear of a semiconductor pellet 10 in a package 12, and a refrigerant-input-output hole 15a linking with the cavity part 13 is formed. As a result, by refrigerant fed through the refrigerant-input-output hole 15a, the semiconductor pellet 10 can be directly cooled. In the case where a substrate 11 retaining the semiconductor pellet 10 exists, the pellet 10 can be cooled via the substrate 11. Since the cooling is executed inside the cooling package 12, the heat generating in the semiconductor pellet 10 is dissipated without passing many material members and interfaces. Thereby, heat dissipating efficiency is increased.

COPYRIGHT: (C)1990,JPO&amp;Japio

